Printer with LED Printbar FIGURE 1

LED Printbar 104

Charge device

Fuser 122

Printer Controller

100

Transfer Corotron

Marking Material Source 116

Substrate 120

Photoreceptor 112

Computer 108

Develop

Charge

Expose

Transfer

Fuse

P. Maeda 10/98

Photoreceptor Plane 232

Light collected by SLA is focused
at the Photoreceptor plane

224

220

220

216

216

Light from LED
228

A portion of the light
emitted by the LED
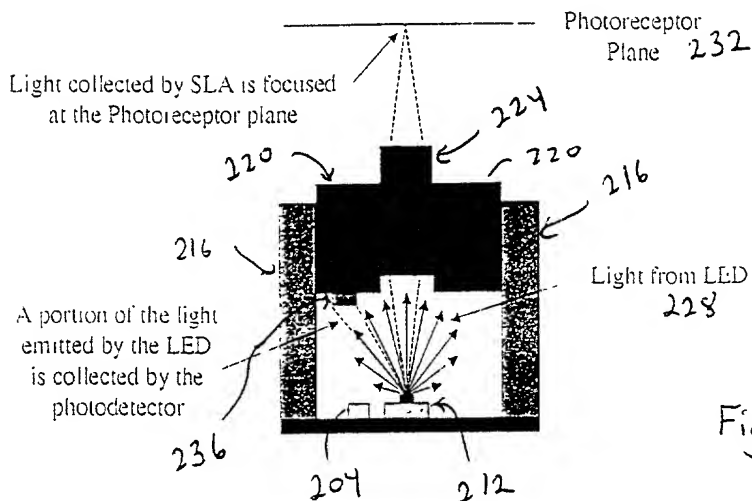is collected by the
photodetector

236

204   212
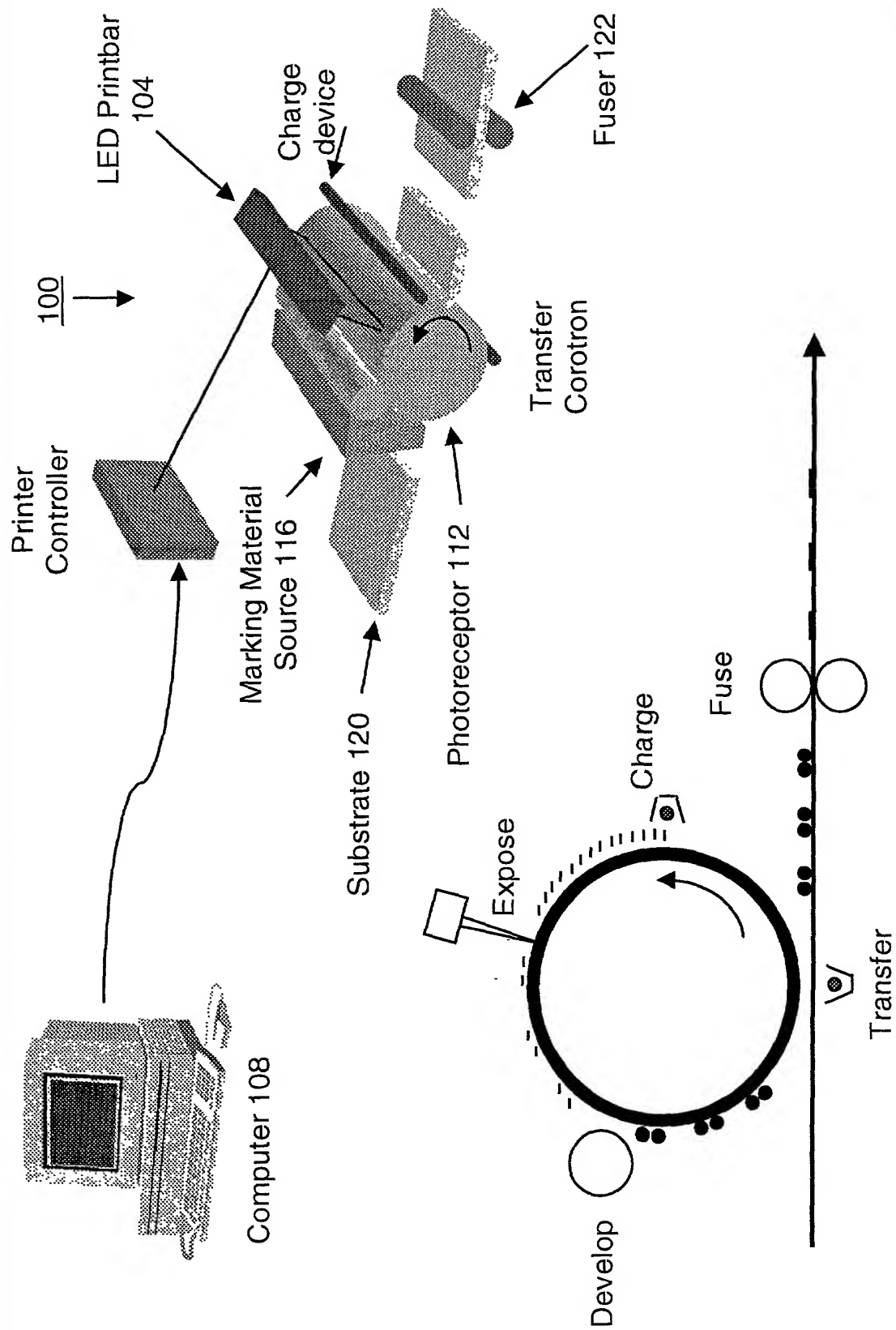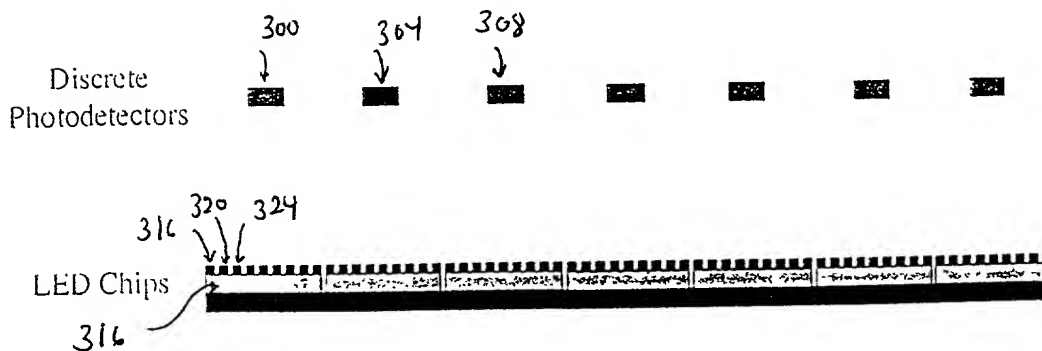
Fig. 2

LED Printbar with Illumination Level Detection
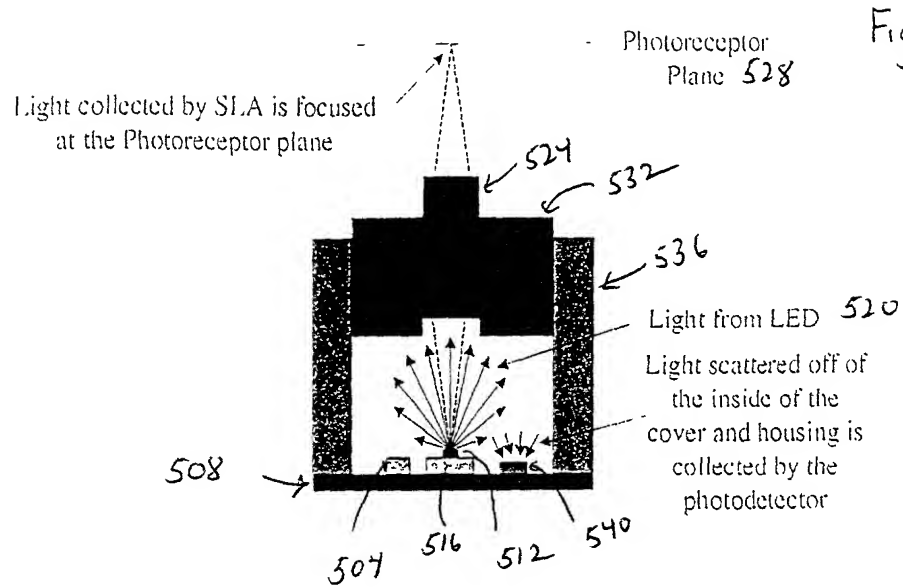Using Discrete Photodetectors (1 per LED Chip)

Fig. 3

Discrete
Photodetectors

300   304   308

312 320 324

LED Chips

316

LED Printbar with Illumination Level Detection
Using a Strip Photodetector

Fig. 4
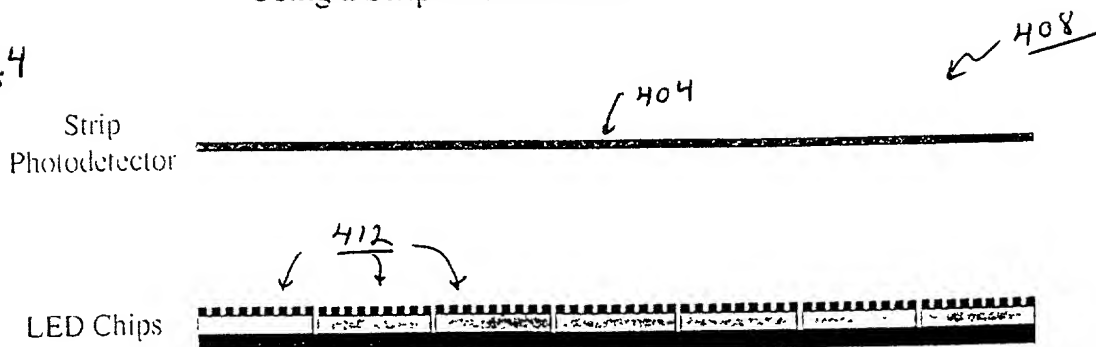
Strip
Photodetector

408

404

412

LED Chips

Fig 5

Light collected by SLA is focused at the Photoreceptor plane

Photoreceptor Plane 528

524
532
536

Light from LED 520

Light scattered off of the inside of the cover and housing is collected by the photodetector

508

504 516 512 540

LED Printbar with Illumination Level Detection
Using Discrete Photodetectors (1 per LED Chip)

LED Chips

Fig 6.

616 620 624

604 608 612

Discrete
Photodetectors
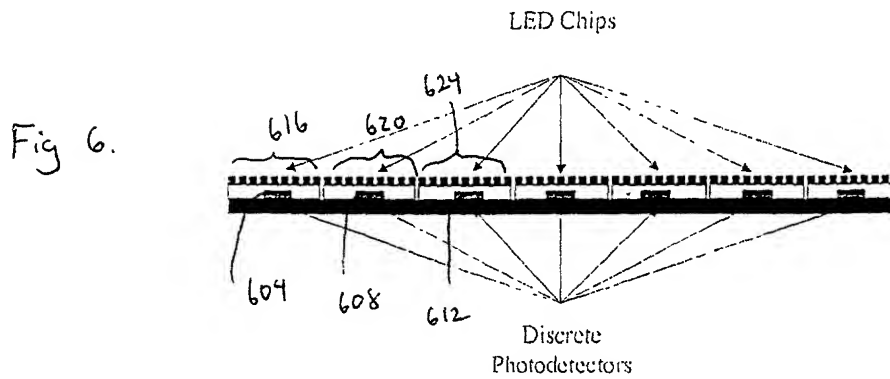
LED Printbar with Illumination Level Detection
Using Discrete Photodetectors (1 per 2 LED Chips)

LED Chips

Fig. 7

708 712 716

704

Strip
Photodetector

Fig 8.

BEGIN

Detect LED output — 804

Compare to reference intensity — 808

LED output exceeds reference — Yes → reduce drive current — 812

No

LED output less than reference — Yes → increase drive current — 816

Store drive current value — 820

Store detector output value — 824

Last LED in printer to be tested — 826 — No → Switch off LED. switch on next LED for testing — 827
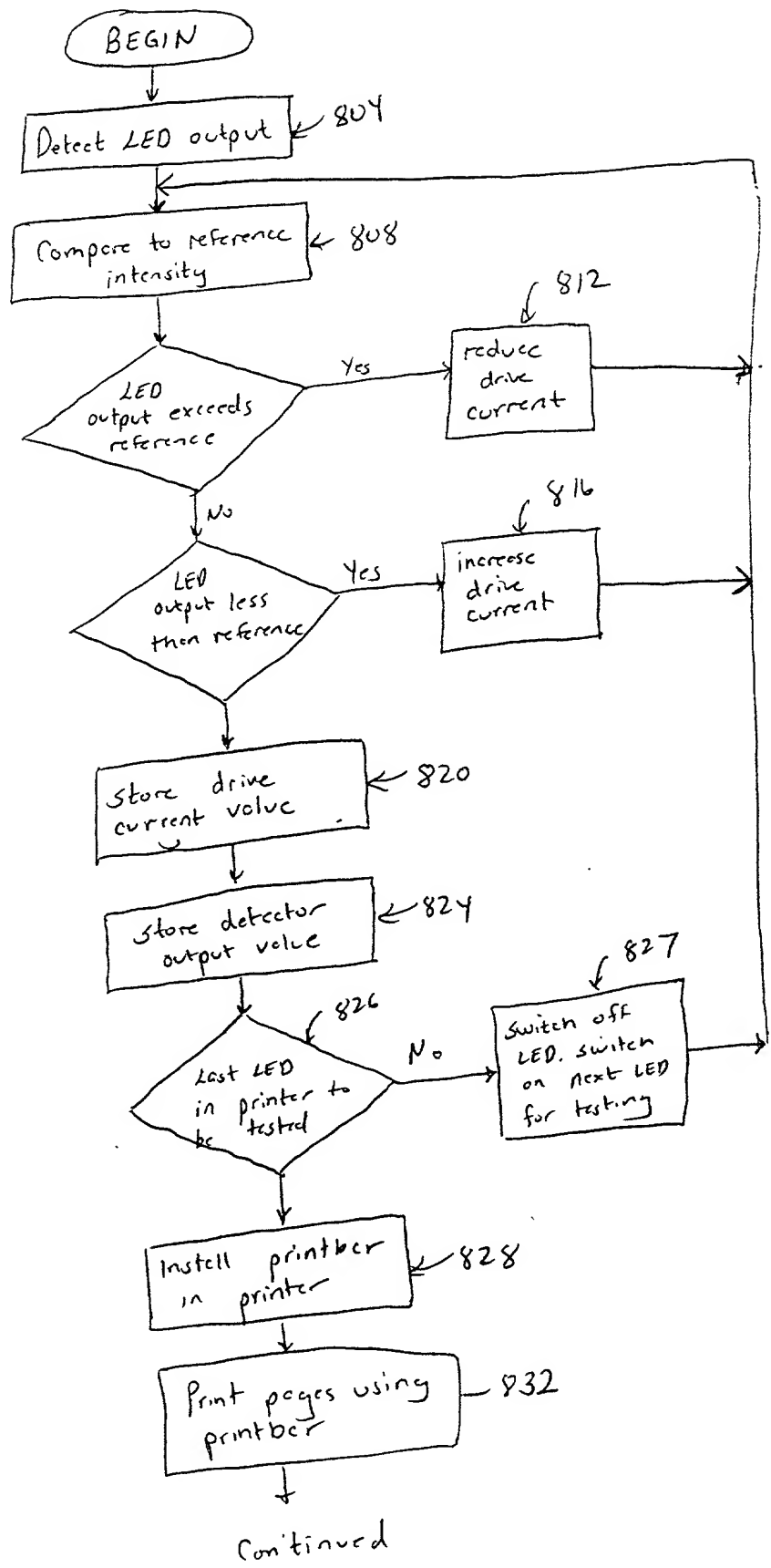
Install printber in printer — 828

Print pages using printber — 832

Continued

Print Pages using printer ← 832

Receive signal to recalibrate printer ← 836

Switch on LED to be tested switch off others ← 840

Compare detector current with maximum detector current ← 844

Detector current below stored max dector current — Yes → Increase drive current (848)

No ↓

Detector current exceed max stored dector current — Yes → decrease drive current (852)

No ↓

Store new calibration current for LED ← 856

Last LED tested — No → Switch off tested LED switch on next LED for testing (864)

↓ 860

Yes ↓

END

Fig 8 (continued)